Provincial Wildlife Tree Policy and Management Recommendations

This document was compiled by Forest Practices Branch of the Ministry of Forests and Habitat Branch of the Ministry of Environment, Lands and Parks, with the assistance of regional and district staff from both ministries.

February, 2000

Provincial Wildlife Tree Policy and Management Recommendations

Part A

Introduction

Wildlife trees are one of the most valuable components of stand-level biodiversity. With over 80 species of vertebrates known to be critically dependent on wildlife trees, management of this resource is vital to proper land stewardship and ecosystem integrity. Direction regarding wildlife tree management began in 1985 with the policy, *Protection of Wildlife Trees*. Since that time, a significant amount of operational experience and research knowledge has been gained. The recommendations outlined in this document integrate that experience and knowledge.

In the 1996 *Forest Practices Code Timber Supply Analysis*, the Chief Forester estimated that implementing Forest Practices Code (FPC) requirements for wildlife trees would result in a provincial timber supply impact of approximately 1.8% (2.8% in the absence of landscape unit objectives). The wildlife tree management recommendations in this paper assume the impacts of managing for wildlife trees will be in line with the Chief Forester's original estimates.

This document has been divided into three sections: introduction, wildlife tree management at the stand level, and wildlife tree management at the landscape level. Details for setting landscape unit objectives are government policy. The recommendations in the stand-level section are suggested best management practices.

The purpose of this document is to:

- detail provincial policy for setting appropriate wildlife tree retention targets and objectives at the landscape level;
- provide guidance for ecologically sound wildlife tree retention at the stand level (i.e., maximizing the wildlife tree habitat value of those trees/areas retained after harvest);
- assist foresters in the development of biologically effective and technically defensible plans and prescriptions by addressing some of the most common issues related to wildlife trees;
- provide a foundation for district-specific management recommendations; and
- ensure that the provincial timber supply impacts for wildlife tree retention are consistent with those estimated by the Chief Forester in 1996.

Definitions

Wildlife Tree: a tree or a group of trees that are identified in an operational plan to provide present or future wildlife habitat. *(Operational Planning Regulation, Section 1)*

Dangerous Tree: any tree that is hazardous to workers because of location or lean; physical damage; overhead hazards; deterioration of the limbs, stem or root system; or a combination of these. *(Workers Compensation Board Regulation, Section 26)*

Wildlife Tree Retention (WTR): retention of wildlife trees through single trees or patches.

Wildlife Tree Patch (WTP): an area/patch of trees with special characteristics (see table 1) that provide valuable habitat for the conservation and enhancement of wildlife.

Part B

Wildlife Tree Management at the Stand Level

Part B details provincial wildlife tree management recommendations concerning the "what, where and when" of wildlife tree retention at the cutblock level. The percent of a cutblock to be retained in WTR areas is based on landscape unit objectives as detailed in Part C of this document.

Ecological Guiding Principles

1. Wildlife tree retention should, as a first priority, protect trees with valuable wildlife tree attributes (see table 1). Where there are few trees with valuable attributes, wildlife tree retention should be located in areas most suitable for long-term wildlife tree recruitment. Where neither of these objectives are attainable, wildlife tree retention should be reflective of the pre-harvest stand.
2. A diversity of wildlife tree retention strategies is recommended – e.g., a range of wildlife tree patch sizes, combined with dispersed trees (there will be ecosystem-dependent variances to this recommendation). However, larger patches containing trees with valuable wildlife habitat attributes generally serve a greater number of ecological functions.
3. It is particularly important to retain uncommon species, stand characteristics, and other elements of stand-level biodiversity. Consequently, relatively uncommon tree species in the block and adjacent subzones should form a larger proportion of the wildlife tree retention objective, provided these species exhibit, or have the potential to develop, valuable wildlife tree attributes.
4. Those trees/areas chosen for wildlife tree retention should be designated for a minimum of one rotation.
5. Trees/areas chosen for wildlife tree retention should be designed to minimize windthrow and the potential for contributing to insect infestation in adjacent stands.
6. If trees chosen as wildlife trees have been felled, they should be left in place to function as coarse woody debris, unless they pose a significant forest health or other concern.
7. Selection of appropriate WTR areas should consider existing wildlife trees on the site—planning for a diversity of wildlife tree classes will better meet future large wildlife tree and CWD objectives (including recruitment and longevity).
8. How the characteristics of individual trees may affect the potential to achieve or maintain a particular stand structure (e.g., shade tolerance, tree longevity, disease/pest resistance, etc.) should be considered when selecting appropriate retention areas. Ensure that the trees being retained have the potential to achieve the desired stand structure.
9. It is important to consider the dynamic nature (caused by succession and other natural factors such as wind) of both individual trees and forest stands—individual and patch reserves will not remain in the same condition forever, and therefore may not provide the same habitat attributes over a rotation.
10. The most windfirm reserves, and therefore the most likely to remain standing after harvesting, are reserves that consider the site, stand and individual trees during layout.

For individual trees, size (low height/diameter ratio) is generally a much more reliable indicator of windfirmness than species.

11. The importance of WTR areas within cutblocks increases with the size of the cutblock. WTR areas should generally be centred around the most suitable trees and distributed throughout the cutblock; distances between wildlife tree patches should not exceed 500 meters.

In general, no single retention strategy is appropriate for all sites. Factors, such as stand type and condition, tree species, and windthrow hazard, create unique conditions for each stand. Site-specific interpretation and application of the stand-level recommendations within this document are essential. The consideration of long-term stand structure goals that maximize the biological values of individual trees and groups of trees left after harvest is critical. A strategy that incorporates a diversity of approaches to stand-level retention is often the most effective.

Determining wildlife tree value

The following characteristics and habitat attributes should be considered when deciding on the wildlife habitat value of a particular tree.

Table 1: Wildlife tree characteristics

Wildlife Tree Value	Characteristics
HIGH A high-value wildlife tree has at least two of the characteristics listed in the adjacent column.	• Internal decay (heartrot or natural/ excavated cavities present) • Crevices present (loose bark or cracks suitable for bats) • Large brooms present • Active or recent wildlife use • Current insect infestation • Tree structure suitable for wildlife use (e.g., large nest, hunting perch, bear den, etc.) • Largest trees on site (height and/or diameter) and/or veterans • Locally important wildlife tree species
MEDIUM	• Large, stable trees that will likely develop two or more of the above attributes for High
LOW	• Trees not covered by High or Medium categories

Administrative Guiding Principles

1. WTR requirements calculated by biogeoclimatic (BEC) subzone are targets to be met at the subzone level. Individual cutblock retention percentages may vary according to biological considerations.
2. Wildlife tree patches (WTPs) are stand-level reserves. However, WTPs >2 hectares, that contain appropriate old-growth attributes, can contribute to landscape-level seral requirements, such as old-growth management areas (OGMAs). Where OGMAs occur within, or adjacent to a cutblock, they count towards WTP requirements (as constrained areas).
3. Wildlife trees should be included within the total area under prescription (TAUP) of a cutblock to allow for auditing and tracking. The percentage to be reserved within the TAUP can either be in hectares, basal area equivalency, or both. However, where large non-treed areas, (e.g. wetlands) occur within the TAUP, WTR requirements may be reduced by that area.
4. Minor salvage must not occur in WTR areas (i.e., WTPs) as per the *Timber Harvesting Practices Regulation*, Section 28, unless approved in a silviculture prescription (SP), or unless the person has received, in writing from the district manager, the terms and conditions that allow minor salvage operations.
5. Where WTPs are salvaged (e.g., high forest health risk), they should be replaced with equivalent suitable habitat as close to the original WTP as possible.
6. Individual dead trees can be retained in forestry operations, provided a qualified wildlife/danger tree assessor has assessed them as safe.

Incorporating Non-treed and Marginally Treed Areas into WTPs

In some cases, it is reasonable to incorporate a small wetland, rock outcrop, or other marginally productive area into a WTP. Where marginally treed/non-treed areas have been included in WTPs, their area (hectares) contribution to the wildlife tree retention objective should be adjusted to account for the actual density of trees. For example, 3 ha with half the stocking of the average pre-harvest stand would provide 1.5 ha of wildlife tree retention requirements. Small non-treed areas that are surrounded by suitable wildlife trees should not contribute greater than 0.25 ha of patch retention, and should not represent more than a small proportion of WTP retention objectives for that block.

Non-representative Habitat for WTR Areas

Although it is recommended that WTR areas be designed to protect specific trees with valuable wildlife tree attributes, in cases where less common species occur on the block, these trees should form a proportionally larger contribution to wildlife tree retention objectives (provided they exhibit, or have the potential to develop, valuable wildlife tree attributes). For example, where a deciduous component occurs on the block, but is generally less common in the stand or across the landscape, it may be appropriate that it form part of the WTR requirements for the block. In cutblocks where currently suitable wildlife tree attributes cannot be found (i.e., some second-growth forests or partially cut areas); the

habitat within the harvest area most suitable for long-term wildlife tree recruitment should be designated for wildlife tree retention.

Windthrow of WTPs

Proper design, selection and layout of reserve areas/trees will significantly reduce windthrow. However, on most sites, some windthrow should be expected. An acceptable level of windthrow, based on forest health and other district-specific considerations, should, where appropriate, be determined prior to harvesting and stated in the SP and/or FDP as a block specific windthrow assessment. Any standards put into an SP must be both measurable and enforceable. Setting percentage windthrow tolerances based on district criteria will streamline the administration of salvage operations. It may be appropriate to incorporate windfirming techniques on reserves where there is a high level of risk. For example, WTPs placed within, or adjacent to, the riparian management zone can help to windfirm the riparian reserve. Other techniques, such as limbing and topping, may also be appropriate.

Salvage of WTPs

Section 28 of the *Timber Harvesting Practices Regulation* defines WTPs as sensitive ecosystems. There can be no minor salvage in a sensitive ecosystem unless approved in an SP or by district manager written approval with defined terms and conditions. District managers may develop policy regarding conditions when minor salvage would be necessary. Stand-specific issues that influence the decision of where salvage may be appropriate for WTPs include:

- worker safety;
- the significance of forest health risk to surrounding stands;
- the ability of the retained wildlife trees to perform as suitable wildlife habitat; and
- the availability of wildlife trees and CWD in adjacent harvested areas.

Where all or part of a WTP is salvaged, the salvaged area should be replaced with other suitable habitat in the nearest possible location. If a WTP suffers blowdown, but is not salvaged, it need not be replaced.

A significant benefit of wildlife tree retention is the eventual input of CWD on the site. The natural dynamics of CWD is to have large fluctuations in the amount of CWD on the ground throughout the life of a stand. If after a windstorm, a WTP is salvaged, natural levels of CWD within the patch will not be present. Not allowing CWD inputs into the decomposition process will, over time, reduce the productivity of forest soils and the amount of available habitat for many species that use large rotting logs.

Contribution of Seed/Shelterwood Trees to WTR Requirements

Where trees have been left on site for objectives, such as a source of seed, shelter, and/or visual quality, they can contribute to the objectives for wildlife tree retention only if the trees will be left on site for at least one rotation (e.g., seed tree with reserves). Where dispersed

trees will be left over the entire rotation, their contribution to wildlife tree objectives should be calculated on a basal area equivalency.

Example:

If wildlife tree retention requirements for a cutblock were 10% by area, the block was 30 ha in size, and the pre-harvest site had 60m^2/ha of basal area, the retention requirements for the site would be 3 ha, or an average of 6m^2/ha of basal area (or an equivalent combination of area and basal area). If a "seed tree with reserves" were to result in 3m^2/ha of "seed trees" being retained, these trees could contribute up to 50% (3m^2/ha = ½ of 6m^2/ha) of the wildlife tree retention requirements for the cutblock, provided they were planned for retention over the entire rotation.

Stubbing (Retention of High Stumps)

Leaving high stumps of low quality/defective wood can help improve vertical stand structure. Machine harvested stub trees do not replace wildlife trees; however, stubbing is an effective practice that can complement wildlife tree retention. It is recommended that stubs do not contribute to the wildlife tree requirements for a cutblock.

Forest Health Considerations for WTR

Consider forest health issues when planning wildlife tree reserves. Identification of potential risks to adjacent stands should be based on local knowledge and hazard zones. For example, if the areas set aside for wildlife trees within a proposed cutblock are at a high risk for beetle infestation within the subsequent two seasons, the district forest health specialist should be consulted (also refer to forest health guidebooks). Forest health concerns, such as root rot and mistletoe, often provide valuable wildlife habitat. Ecological values and forest health concerns must be balanced when developing appropriate plans and prescriptions.

Worker Safety

A system for assessing potentially dangerous trees has been developed by the Wildlife Tree Committee. Workers responsible for assessing dangerous trees must have successfully completed the Wildlife/Danger Tree Assessors Course. If there is exposure to potentially dangerous trees for workers, WCB Regulations (OHS Regulation, Section 26) require these trees to be:

- surrounded by a no-work zone;
- assessed as safe by a qualified assessor; or
- removed during forestry operations.

Tracking WTRs

Mandatory tracking requirements for WTR areas:

- wildlife tree retention and other reserve areas greater than 0.25 hectares should be recorded on SP maps;
- the total area (hectares) in reserve and a description of the reserve type must be recorded in the SP; and
- reserves greater than two hectares should be recorded on forest cover maps.

Optional tracking requirements for WTR areas:

- The ISIS system provides optional recording of the following reserve attributes: tree species, height of leading species, basal area and age.

  Note: mapping standards re: reserves (SP and forest cover maps) will be developed in 2000.

WTR Impact Assessment:

The Ministry of Environment, Lands and Parks (MELP), and the Ministry of Forests (MoF) will be developing an auditing/monitoring process to determine the effectiveness of the provincial wildlife tree management policy and management recommendations. This monitoring/auditing process will also address a review of the timber supply impacts associated with wildlife tree retention.

Forest Development Plans

Forest Development Plan (FDP) objectives must reflect the wildlife tree objectives described in the landscape unit plan. To provide biological flexibility, there can be site-by-site variations to the amount of retention requirements that come from non-contributing and timber harvesting land base (THLB) areas. However, at the FDP level, when averaged across a subzone, the percentage of wildlife tree retention requirements that come from non-contributing and THLB areas must closely approximate the percent calculated for each subzone. Regardless of the level of flexibility between areas, as a general rule, stand structure should be retained in all cutblocks.

Example:

The following statement could be part of the FDP general wildlife tree management objectives and measures:

Manage for wildlife tree requirements by reserving wildlife trees at a level set out in the landscape unit objective. Actual wildlife tree reserves must be planned on a site-specific basis to meet the following strategies: Select appropriate statements (modify where necessary) from the ecological and administrative guiding principles.

PART C

Wildlife Tree Management at the Landscape Level

Part C is to be used in conjunction with Chapter 2 and Appendix 3 of the *Landscape Unit Planning Guide (replaces pp.35-36 of the LUPG).* This section details the process for calculating wildlife tree retention requirements at the subzone level in order to establish landscape unit objectives.

Varying from these procedures may be necessary where an established higher level plan exists and directs otherwise.

Landscape Unit Planning

WTR objectives are determined and established for each biogeoclimatic subzone within a landscape unit during landscape unit planning. Subzones with a higher proportion of area available for harvest, and those with a long harvest history with little or no wildlife tree retention, have higher retention requirements.

WTR objectives are established for each subzone within a landscape unit, and applied to each cutblock within the subzone. However, there is opportunity to vary these objectives for biological reasons, in accordance with the ecological and administrative guiding principles of this document.

Determining the total percent WTR at the district level

The following is the recommended procedure for calculating the WTR requirement for each subzone, within a landscape unit:

Step 1

Collect the following information for each biogeoclimatic subzone within each landscape unit:

- crown forested area (see Chapter 2 of the LUPG for details); and
- timber harvest land base (THLB).

Step 2

Calculate the percentage of the biogeoclimatic subzone within the landscape unit available for harvest as follows:

THLB/crown forested area x 100

Step 3

Make a best professional estimate of the amount of the subzone that has been harvested without wildlife tree retention (i.e., the area of forest previously harvested where there is little wildlife tree habitat). This estimate must be agreed to by MELP and MOF.

Step 4

Determine appropriate total wildlife tree retention targets from Appendix 3 of the LUPG using the values determined in the above Steps 1-3 (see Table 2).

Note: When using the Tables in Appendix 3 of the LUPG, Table A3.2 must be used over Table A3.1 where OGMAs have not been established.

Table 2 illustrates how to calculate the "total wildlife tree retention target" for a landscape unit by subzone.

Table 2 -- Total wildlife tree retention target for landscape unit by subzone

A	B	C	D	E	F	G
Land-scape Unit (LU)	**BEC Subzone**	**Crown Forested (NC+THLB)**	**THLB**	**% Subzone Available for Harvest**	**%THLB Harvested**	**Total Wildlife Tree Retention %**
A	SBSdk ESSFmc	58 957 13 709	49524 10967	84% 80%	30% 10%	8% 6%

Column **a** lists all the LUs in the planning area.

Column **b**: biogeoclimatic subzone(s) within each LU (note this is not done to variant).

Column **c**: the total crown forested land base by subzone.

Column **d**: the timber harvesting land base by subzone.

Column **e**: calculated as column **d** divided by column **c** (e.g., for LU A SBSdk: 49524/58957=84%).

Column **f**: the % of the THLB that has been previously harvested without wildlife tree retention.

Column **g**: obtain this value from Appendix 3 of the LUPG.

The percentage of the total WTR requirements that are to be met from the timber harvesting landbase are 25% on the coast and 50% in the interior – this area is known as the THLB retention percentage. The percentages are taken from the *Forest Practices Code Timber Supply Analysis, February 1996*. Where there is no biological need to vary the default THLB retention percentages by subzone, Steps 5A and 5B can be skipped. In many cases, landscape unit objectives can be written without going through Steps 5A and 5B.

Step 5A – Determining baseline THLB retention (i.e., the total area to be retained in wildlife trees from the THLB within a subzone):

DO NOT COMPLETE STEPS 5A and 5B IF IT IS NOT BIOLOGICALLY NECESSARY TO VARY FROM THE DEFAULT (25% coast/50% interior) THLB RETENTION BY SUBZONE

To calculate the baseline THLB wildlife tree retention area (hectares), multiply the total wildlife tree percentage by the appropriate THLB percentage (25% coast or 50% interior) by the crown forested area. For example (SBSdk from table 2),

8% x 50% x 58957 = 2358 hectares.

Knowing the THLB retention area will allow for (i) flexibility of retention hectares between subzones (step 5B) where appropriate for biological reasons, and (ii) tracking/auditing of hectares retained for wildlife trees.

Table 3 – An interior example baseline THLB wildlife tree retention table

A	B	C	D	E	F	G	H
Land scape Unit	**Subzone**	**Total WTR %**	**Default THLB %**	**THLB WTR %**	**Crown Forest**	**Total WTR ha.**	**THLB WTR ha.**
A	SBSdk	8%	50%	4.0%	58957	4717	2359
	ESSFmc	6%	50%	3.0%	13709	823	411
B	SBSdk	5%	50%	2.5%	13790	690	345
	SBSmc	6%	50%	3.0%	49392	2964	1482
	ESSFmc	3%	50%	1.5%	11134	334	167
C	SBSdk	3%	50%	1.5%	13743	412	206
	SBSmc	6%	50%	3.0%	20693	1242	621
	ESSFmc	3%	50%	3.0%	9629	289	144
Totals						**11471**	**5735**

Note: The default THLB WTR% (column "D") is 50% (interior) of total WTR (column "C").

Step 5B – Variation of subzone wildlife tree retention targets within the THLB

Variation of the wildlife tree retention requirements (variation from the THLB WTR %) between subzones should only be done where there is a biological need. For example on subzones that are highly operable (little, if any, constrained area), it may be biologically necessary to set aside a higher percentage from the THLB in order to ensure sufficient WTR areas have been maintained in that subzone. Alternatively, on subzones where there are high levels of constrained areas with wildlife tree attributes, it may not be necessary to set aside as much area from the THLB for wildlife tree retention. The appropriate variation between subzones should be determined cooperatively between MELP, MoF in consultation with the licensee. Regardless of the level of variation between subzones, the total wildlife tree retention hectares and THLB retention hectares should not vary when averaged across the FDP (Table 4, columns "H" and "I").

The following example (Table 4) illustrates varying the THLB retention percentage by subzone within landscape units.

Table 4 – Varying THLB retention percentage by subzone

A	B	C	D	E	F	G	H	I
Land scape Unit	**Subzone**	**Total WTR %**	**Varied THLB Cap %**	**THLB WTR %**	**Crown Forest**	**Total WTR ha.**	**THLB WTR ha.**	**50% X WTR ha. = the baseline**
A	SBSdk	8%	60%	4.8%	58957	4717	2830	2359
	ESSFmc	6%	35%	2.1%	13709	823	288	411
B	SBSdk	5%	65%	3.2%	13790	690	448	345
	SBSmc	6%	40%	2.4%	49392	2964	1185	1482
	ESSFmc	3%	35%	1.0%	11134	334	117	167
C	SBSdk	3%	65%	1.9%	13743	412	268	206
	SBSmc	6%	40%	2.4%	20693	1242	497	621
	ESSFmc	3%	35%	1.0%	9629	289	101	144
Totals							**5734**	**5735**

Note: Columns "D" and "E" represent variation from the default interior THLB retention %

Step 6

Write the landscape level wildlife tree retention objective and strategy based on steps 1-5.

Objective (interior example):

Retain 8% of each cutblock within the SBSdk as wildlife trees subject to the following:

Objective (interior example):

Retain 8% of each cutblock within the SBSdk as wildlife trees subject to the following:

- All non-contributing area with suitable wildlife trees must first be used to achieve the overall cutblock target.
- A maximum of 4.8% of the THLB will be left as wildlife tree retention, to be managed over the blocks within the SBSdk of a forest development plan. It is acceptable on a single cutblock to be above or below the 8% and/or 4.8% for biological reasons, however, when measured over the SBSdk subzone of the FDP, the 4.8% limit on the THLB should not be exceeded.

Note : all landscape unit objectives for wildlife tree retention can allow for variation at the stand level for biological reasons. The variation is managed within a subset of cutblocks. The purpose is to allow for the best wildlife tree distribution while staying within the impact cap. A district may check that the intent of the landscape unit objective is met at the level most appropriate to their conditions and needs (e.g. cutting permit or a series of cutting permits). Regardless of how the stand level variation is managed, the objective for wildlife tree retention must be consistent between the silviculture prescription and forest development plan, and between the forest development plan and the landscape unit.

Strategy:

- Every block should have some area reserved for wildlife tree retention.
- Where practical, retain wildlife trees in both patches and individually.